

This listing of claims will replace all prior versions, and listings, of claims in the application:

**LISTING OF CLAIMS:**

**1. – 5. (Canceled)**

- 6. (Previously presented)** An apparatus for molding a replica comprising:
- a mother mold having a mold cavity corresponding to the outer contour of an article to be duplicated, said mother mold being formed from a transparent cured product of a photo-curable liquid silicone rubber composition,
- a means for casting or filling the mold cavity with a photo-curable liquid resin, and
- a means for irradiating light to the photo-curable liquid resin from outside the mother mold thereby curing the photo-curable resin;
- wherein the transparent cured product of the mother mold is cured from a photo-curable liquid silicone rubber composition comprising (i) 100 parts by weight of an organopolysiloxane and (ii) 0.01 to 5 parts by weight of a photo-initiator,
- the organopolysiloxane (i) comprising:
- (A) 30 to 90% by weight of an organopolysiloxane of the following average compositional formula (1):



wherein R, which is identical or different, is a substituted or unsubstituted monovalent hydrocarbon group free of an aliphatic unsaturated bond or an alkoxy group; R<sup>1</sup>, which is identical or different, is a photo-reactive group selected from a (meth)acryloyl-containing

group, vinyloxyalkyl group, and epoxy-containing group; and letters a and b are positive numbers satisfying  $1.90 \leq a < 2.40$ ,  $0.0003 \leq b \leq 0.10$ , and  $1.90 < a + b \leq 2.40$ , the organopolysiloxane containing at least two photo-reactive groups in a molecule and having a viscosity of 100 to 1,000,000 centipoise at 25°C, and

(B) 10 to 70% by weight of a silicone resin comprising  $R_p R^1_q \text{SiO}_{1/2}$  units (M),  $\text{SiO}_2$  units (Q), and/or  $\text{XSiO}_{3/2}$  units (T) wherein R and  $R^1$  are as defined above, letters p and q each are equal to 0, 1, 2 or 3 and satisfy  $p + q = 3$ , X is selected from R and  $R^1$ , the molar ratio  $M/(Q + T) = 0.6$  to 1.2, and the molar ratio  $R^1/\text{Si} = 0.01$  to 0.10, the silicone resin (B) being soluble in component (A).

7. (Canceled)

8. (Original) The apparatus of claim 6 wherein said casting means includes a means for agitating and defoaming said photo-curable liquid resin under a reduced pressure.

9. (Original) The apparatus of claim 6 wherein said light irradiating means irradiates light having a wavelength in the range of 200 to 500 nm.

10. (Previously presented) The apparatus of claim 6, wherein the transparent cured product forming the mother mold has a Shore A hardness of 20 to 60 and a transmittance of incident actinic radiation of at least 10%T at a wall gage of 10 mm.

11. (Previously presented) The apparatus of claim 10, wherein the transparent cured product forming the mother mold has a Shore A hardness of 30 to 50.

**12. (Previously presented)** The apparatus of claim 6, further comprising the mold cavity being at least partly filled with a radical polymerization type liquid resin composition comprising: (1) a low molecular weight compound having at least one ethylenically unsaturated bond, an oligomer thereof or a mixture thereof and (2) a photo-initiator capable of absorbing actinic radiation to initiate polymerization thereof.

**13. (Canceled)**

**14. (Previously presented)** An apparatus for molding a replica comprising:  
a mother mold having a mold cavity corresponding to the outer contour of an article to be duplicated, said mother mold being formed from a transparent cured product of a photo-curable liquid silicone rubber composition,

a means for casting or filling the mold cavity with a photo-curable liquid resin, and

a means for irradiating light to the photo-curable liquid resin from outside the mother mold thereby curing the photo-curable resin;

wherein the transparent cured product of the mother mold is cured from a photo-curable liquid silicone rubber composition comprising (iii) an organopolysiloxane and (iv) a photo-initiator, the organopolysiloxane (iii) comprising:

(C) 30 to 90% by weight of an organopolysiloxane of the following average compositional formula (2):



wherein R, which is identical or different, is a substituted or unsubstituted monovalent hydrocarbon group free of an aliphatic unsaturated bond or an alkoxy group; R<sup>2</sup>, which is identical or different, is an aliphatic unsaturated group selected from an alkenyl group and an

oxygen atom-containing aliphatic unsaturated group; and letters c and d are positive numbers satisfying  $1.90 \leq c < 2.40$ ,  $0.0003 \leq d \leq 0.10$ , and  $1.90 < c + d \leq 2.40$ , the organopolysiloxane containing at least two aliphatic unsaturated groups in a molecule and having a viscosity of 100 to 1,000,000 centipoise at 25°C;

(D) 10 to 70% by weight of a silicone resin comprising  $R_pR^2_qSiO_{1/2}$  units (M),  $SiO_2$  units (Q), and/or  $YSiO_{3/2}$  units (T) wherein R and  $R^2$  are as defined above, letters p and q each are equal to 0, 1, 2 or 3 and satisfy  $p + q = 3$ , and Y is selected from R and  $R^2$ , the molar ratio  $M/(Q + T) = 0.6$  to 1.2, and the molar ratio  $R^2/Si = 0.01$  to 0.10, the silicone resin (D) being soluble in component (C); and

(E) an organosilane or organosiloxane containing at least two mercapto groups in a molecule in such an amount that the equivalent of mercapto groups is 0.1 to 20 relative to the aliphatic unsaturated groups supplied from components (C) and (D).

**15. (Previously presented)** An apparatus for molding a replica comprising:

a mother mold having a mold cavity corresponding to the outer contour of an article to be duplicated, said mother mold being formed from a transparent cured product of a photo-curable liquid silicone rubber composition,

a means for casting or filling the mold cavity with a photo-curable liquid resin, and

a means for irradiating light to the photo-curable liquid resin from outside the mother mold thereby curing the photo-curable resin;

wherein the transparent cured product of the mother mold is cured from a photo-curable liquid silicone rubber composition comprising:

(C) 30 to 90% by weight of an organopolysiloxane of the following average compositional formula (2):



wherein R, which is identical or different, is a substituted or unsubstituted monovalent hydrocarbon group free of an aliphatic unsaturated bond or an alkoxy group;  $R^2$ , which is identical or different, is an aliphatic unsaturated group selected from an alkenyl group and an oxygen atom-containing aliphatic unsaturated group; and letters c and d are positive numbers satisfying  $1.90 \leq c < 2.40$ ,  $0.0003 \leq d \leq 0.10$ , and  $1.90 < c + d \leq 2.40$ , the organopolysiloxane containing at least two aliphatic unsaturated groups in a molecule and having a viscosity of 100 to 1,000,000 centipoise at 25°C;

(D) 10 to 70% by weight of a silicone resin comprising  $R_p R_q^2 SiO_{1/2}$  units (M),  $SiO_2$  units (Q), and/or  $YSiO_{3/2}$  units (T) wherein R and  $R^2$  are as defined above, letters p and q each are equal to 0, 1, 2 or 3 and satisfy  $p + q = 3$ , and Y is selected from R and  $R^2$ , the molar ratio  $M/(Q + T) = 0.6$  to 1.2, and the molar ratio  $R^2/Si = 0.01$  to 0.10, the silicone resin (D) being soluble in component (C);

(F) an organohydrogenpolysiloxane of the following average compositional formula (3):



wherein R, which is identical or different, is a substituted or unsubstituted monovalent hydrocarbon group free of an aliphatic unsaturated bond or an alkoxy group, letters e and f are positive numbers satisfying  $0.70 \leq e \leq 2.69$ ,  $0.01 \leq f \leq 1.20$ , and  $1.5 \leq e + f \leq 2.7$ , the organohydrogenpolysiloxane containing at least two SiH groups in a molecule, in such an

amount that 0.4 to 10 SiH groups are available per aliphatic unsaturated group supplied from components (C) and (D); and

(G) a catalytic amount of a platinum catalyst for effecting hydrosilylation between the aliphatic unsaturated groups in components (C) and (D) and the SiH group in component (F) upon light exposure.

**16. (Previously presented)** The apparatus of claim 6, wherein the mother mold consists of the transparent cured product of a photo-curable liquid silicone rubber composition.

**17. (Previously presented)** The apparatus of claim 6, wherein the mother mold is separable into two or more sections to allow removal of the article to be duplicated.

**18. (Previously presented)** The apparatus of claim 6, wherein the means for irradiating light is one or more UV fluorescent lamps.

**19. (Previously presented)** The apparatus of claim 6, wherein the mother mold is provided with a runner for filling the mold cavity with a photo-curable liquid resin.

**20. (Previously presented)** The apparatus of claim 14, wherein said casting means includes a means for agitating and defoaming said photo-curable liquid resin under a reduced pressure.

21. **(Previously presented)** The apparatus of claim 14, wherein said light irradiating means irradiates light having a wavelength in the range of 200 to 500 nm.
22. **(Previously presented)** The apparatus of claim 14, wherein the transparent cured product forming the mother mold has a Shore A hardness of 20 to 60 and a transmittance of incident actinic radiation of at least 10%T at a wall gage of 10 mm.
23. **(Previously presented)** The apparatus of claim 22, wherein the transparent cured product forming the mother mold has a Shore A hardness of 30 to 50.
24. **(Previously presented)** The apparatus of claim 14, further comprising the mold cavity being at least partly filled with a radical polymerization type liquid resin composition comprising: (1) a low molecular weight compound having at least one ethylenically unsaturated bond, an oligomer thereof or a mixture thereof and (2) a photo-initiator capable of absorbing actinic radiation to initiate polymerization thereof.
25. **(Previously presented)** The apparatus of claim 15, wherein said casting means includes a means for agitating and defoaming said photo-curable liquid resin under a reduced pressure.
26. **(Previously presented)** The apparatus of claim 15, wherein said light irradiating means irradiates light having a wavelength in the range of 200 to 500 nm.

**27. (Previously presented)** The apparatus of claim 15, wherein the transparent cured product forming the mother mold has a Shore A hardness of 20 to 60 and a transmittance of incident actinic radiation of at least 10%T at a wall gage of 10 mm.

**28. (Previously presented)** The apparatus of claim 27, wherein the transparent cured product forming the mother mold has a Shore A hardness of 30 to 50.

**29. (Previously presented)** The apparatus of claim 15, further comprising the mold cavity being at least partly filled with a radical polymerization type liquid resin composition comprising: (1) a low molecular weight compound having at least one ethylenically unsaturated bond, an oligomer thereof or a mixture thereof and (2) a photo-initiator capable of absorbing actinic radiation to initiate polymerization thereof.

**30. (New)** The apparatus of claim 6, further comprising means for preparing the mother mold, which further means comprise:

a master model prepared by inputting three-dimensional CAD data into an optical shaping system, supplying a photo-curable resin and irradiating the photo-curable resin in accordance with the CAD data inputs to cure it in the shape of the master model,

a frame of a UV-transmissive acrylic resin for placing the master model therein and for casting a photo-curable liquid silicone rubber composition around the master model to prepare the mother mold , and

a vacuum tank for removing air dissolved in the photo-curable liquid silicone rubber composition.



**31. (New)** The apparatus of claim 15, further comprising means for preparing the mother mold, which further means comprise:

a master model prepared by inputting three-dimensional CAD data into an optical shaping system, supplying a photo-curable resin and irradiating the photo-curable resin in accordance with the CAD data inputs to cure it in the shape of the master model,

a frame of a UV-transmissive acrylic resin for placing the master model therein and for casting a photo-curable liquid silicone rubber composition around the master model to prepare the mother mold , and

a vacuum tank for removing air dissolved in the photo-curable liquid silicone rubber composition.

**32. (New)** The apparatus of claim 16, further comprising means for preparing the mother mold, which further means comprise:

a master model prepared by inputting three-dimensional CAD data into an optical shaping system, supplying a photo-curable resin and irradiating the photo-curable resin in accordance with the CAD data inputs to cure it in the shape of the master model,

a frame of a UV-transmissive acrylic resin for placing the master model therein and for casting a photo-curable liquid silicone rubber composition around the master model to prepare the mother mold , and

a vacuum tank for removing air dissolved in the photo-curable liquid silicone rubber composition.